

Claims:

1. An electrostatic chuck comprising:
a chuck base for supporting a wafer;
a dielectric film mounted on the chuck base, the dielectric film having an
5 electrode for supplying direct current voltage to provide an electrostatic force
necessary to fix the wafer, the electrode being disposed in the dielectric film; and
a cooling channel for supplying refrigerant to the dielectric film to control
the temperature of the wafer, the cooling channel comprising:
at least two first cooling channel parts formed at the surface of the
10 dielectric film corresponding to the edge part of the wafer such that the first cooling
channel parts form concentric circles;
second cooling channel parts formed at the surface of the dielectric
film such that the first cooling channel parts are connected to each other through the
second cooling channel parts;
15 first through channels formed through the dielectric film for
supplying the refrigerant to the first and second cooling channel parts; and
a second through channel formed through the center of the
dielectric film for supplying the refrigerant to the center of the wafer.
2. The chuck as set forth in claim 1, wherein the dielectric film is a
20 dielectric sheet comprising stacked dielectric sheet parts, between which the
electrode is disposed, the dielectric sheet being attached to the chuck base while
being compressed.
3. The chuck as set forth in claim 1, wherein the inside part of the first
cooling channel parts, which is near to the center of the dielectric film, is disposed
25 within the distance corresponding to not more than 1/4 of the diameter of the wafer
from the circumference of the dielectric film at the most.
4. The chuck as set forth in claim 1, wherein
the number of the second cooling channel parts is eight, and
the first through channels, whose number is equal to that of the second

cooling channel parts, are connected to the second cooling channel parts adjacent to the connections between the second cooling channel parts and the outside part of the first cooling channel parts, respectively.

5. A chuck base comprising:

- 5 a base body for supporting a chuck, on which a wafer is located; and
 a cooling channel for cooling the chuck, the cooling channel comprising:
 a curved part, which extends outward from the center of the chuck
base under the surface of the chuck base, which is opposite to the chuck, in the
shape of a cross; and
10 a circular part connected to the curved part, the circular part being
formed in the shape of a circle around the cross-shaped part.

6. The base as set forth in claim 5, further comprising:

- a connection part disposed between one end of the cross-shaped part and
one end of the circular part for connecting the cross-shaped part and the circular
15 part, whereby
 the cooling channel begins at the other end of the cross-shaped part, and
ends at the other end of the circular part.

7. The base as set forth in claim 5, wherein

- the base body is provided with four first through holes, through which lift
20 pins for locating the wafer on the chuck are inserted, and
 the cooling channel is curved such that the four first through holes are
disposed between the cross-shaped part and the circular part, and the cross-shaped
part extends around the first through holes.

8. The base as set forth in claim 5, wherein

- 25 the base body is provided with second through holes for supplying electric
power necessary to generate an electrostatic force to the chuck, and
 the cooling channel is curved such that the cross-shaped part extends
around the inside parts of the second through holes.